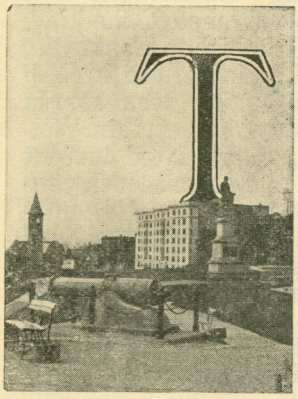
THE SCHOOL OF ENGINEERING OF MILWAUKEE AND RADIO

The writer of the following article, Morris A. Thomas, is the radio engineer in charge of the school's radiocast station W. S. O. E. He will be very glad to explain the apparatus of the school to any student who may be interested. Mr. Thomas is to be credited with the achievement of having erected the apparatus in use at our radio station. This is a task that anyone can be proud of having done, since the expert radio engineers of the Western Electric Company designed the station. But then Mr. Thomas is not a novice in radio engineering, for he was Radio Man, First Class, in the United States Navy during the World War, seeing constant service on one of Uncle Sam's torpedo boat destroyers in European waters in that conflict. He enlisted in the Navy in June, 1917, and was honorably discharged in October, 1919. From October, 1919, to June, 1922, he was radio operator on several merchant vessels that sailed in European waters as well as along the west coast of Africa. In September, 1922, he entered the School of Engineering. We are all proud to have a man of Mr. Thomas' calibre among us.—The Editor.

By Morris A. Thomas



THE School of Engineering of Milwaukee was one of the first of Wisconsin's educational institutions to realize the tremendous importance of radio and to visualize its great possibilities as a disseminator of information to those who, unfortunately, are unable to attend school.

Starting with a one-kilowatt spark transmitter back in 1914 and operating under the amateur call of 9 YAD, the school has progressed through the amateur stage of radio to a position with the leaders in the broadcast field. In 1922, the spark transmitter was abandoned and a 100-watt broadcast transmitter designed and built by students of the school. It went on the air first under the call of W I A O, which was changed later to W S O E. This 100-watt equipment was operated daily until the more powerful transmitter, of which we will now tell you was dedicated July 7th, 1925.

The new W S O E equipment is a standard Western Electric Company 500-watt broadcast transmitter built in three panels, (A) the power panel, on which are located controls and indicating meters for the high and low voltage supply to the power tubes; (B) The speech input panel, containing a three-stage inpedence coupled amplifier, volume control, indicating meters, signal panel and switching controls; (C) the transmitter panel, which contains four (4) 250-watt power tubes, two tubes acting as oscillators and two as modulators, a 50-watt power amplifier tube, indicating meters, and other auxiliary apparatus.

Just a word or so about the transmitter design. The modified Meissner circuit as used by the Western Electric Company in their transmitters was found to be unsuitable for stable and effiicient operation at the high frequency (1200 kilo-cycles) on which W S O E operated. Hence, it was necessary to change completely the oscillator circuit and modify somewhat the modulator circuit. After some eperimenting, the Tank Circuit, or Radio Frequency transmission line, as this circuit is commonly called, was adopted. A straight Hartley oscillator circuit is used which is tuned to resonance with the tank circuit at the transmitter frequency of 1200 kilo-cycles. The tank circuit itself is comprised of two (2) .001 mfd. condensers shunted across a few turns of the oscillator coil, the number of turns used depending upon the transmitting frequency.

The antenna and counterpoise are coupled together by means of an oscillator coil and tuned to the transmitter frequency by varying the number of turns on the oscillator coil between the antenna and counterpoise connections. This tuned antenna circuit is connected to the tank or transmitter circuit by a single wire which acts simply as a transmission line of radio frequency current. Hence, the name "Radio Frequency Transmission Line."

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S. O. E. MUSICAL ACTIVITIES

As usual, the summer months have passed with comparatively little activity in the musical field, at least as far as our student orchestra and band are concerned. But now that all the fellows are back with revived pep and interest, a bright future for a new and better orchestra and band is predicted by "Dick" Rich.

To those who are not acquainted with "Dick," we might say that he is one of our technicians who has been and still is very active in organizing our musical club. He has been very successful in conducting what is now known as the "W. S. O. E. Orchestra," which not only broadcasts regularly through the School's Radio Station, but also plays on outside "jobs," thereby making the organization self-supporting.

"Dick," by the way, is now planning to organize the new 1925-6 S. O. E. Band. "In organizing this band I have been very much encouraged by the fact that a great number of the newcomers are not only electrically, but also musically inclined," says "Dick."

Arrangements have been made with Oscar W. Meissner, of our Radio Department, to reserve several dates on the radio programs for both the band and orchestra. Student soloists also have the opportunity of performing for the radio, thus providing a good opportunity for your folks and friends at home to hear you.

So all ye fellows who play some kind of musical instrument and possess the spirit and interest a student should have, get out your old piccolo or horn and prepare for an active season. Get in touch with Oscar W. Meissner of the S. O. E. Radio Station or with Professor George B. Haverson in the Faculty Room.

"I never saw such dreamy eyes."

"You never stayed so late."

GOOD OLD S. O. E.

(Sung to the tune of Battle Hymn of the Republic.)

Old S. O. E. is here today, in ranks a hundred strong
They're marching on to victory
And joyous is their song.
'Twill reach across the U. S. A.
No distance is too long
For good old S. O. E.

(Chorus.)

Glory, glory to Milwaukee,
Glory, glory to Milwaukee,
Glory, glory to Milwaukee,
From good old S. O. E.

And when to dear old S. O. E.
Some day we'll say good bye
We'll leave a record of a name
Whose glories ne'er shall die.
So give a cheer that all may hear
It's echoes far resound
From station S. O. E.

(Chorus.)

It has been suggested that the students make use of the vacant lot opposite the school to use as a horse-shoe pitching ground. There is space enough there for about twenty courts. The boys could very easily get some old horse-shoes. We can furnish you with some iron pipe to use of pegs.

Those students who are interested in this will please write their names on a piece of paper and drop it in one of the Electric Spark boxes. On the paper state that you are interested in tne game.

The Autumn term begins on September 29. Let us all begin our studies with a zest and a vim so that we may attain our goal—a high rating at the end of the term. Let us be punctual in our attendance, and keep up in our studies, for it is easier to keep in the procession, than to catch up.

Any student who is in need of a position should see Miss Vaughn in the office, since she has a list of positions available.

Herman Kannenberg

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